Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

SVD Techniques Applied to Modulated ECH Data on DIII-D[1]
D.F. MEYERSON, M.E. AUSTIN, K.W. GENTLE, U. Texas-Austin, T.C. LUCE, C.C. PETTY, General Atomics — Sawtooth contamination is a serious problem that interferes with modulated electron cyclotron heating (MECH) induced heat pulse propagation analysis. To address this issue we apply system identification SVD techniques (SI-SVD) to separate the effect of sawteeth and MECH. DIII-D ECE data with and without sawtooth contamination is analyzed and compared to assess the validity of the method. While the different sources separated out by this method are assumed to have the ability to excite the same eigenmodes of the linearized energy transport equation, the sources themselves are assumed to be independent of one another. It is well known that the location of MECH deposition can alter the character of sawtooth instability; to quantify to what degree the location of deposition alters the results we consider on-axis as well as off-axis MECH shots. Additionally the technique gives a means of verifying the power deposition profile of the relevant sources. The results are compared with local power balance calculations as well as calculations of absorption profiles.

[1]Supported by the US Department of Energy under DE-FG03-07ER54415 and DE-FC02-04ER54698.

Craig Petty
General Atomics

Date submitted: 24 Jul 2009 Electronic form version 1.4